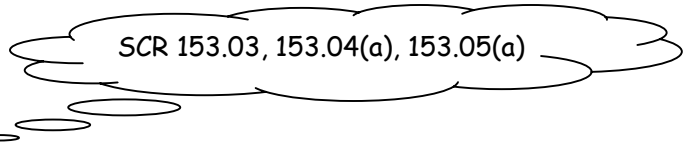
Quality Control and Assurance Plan [SCR 153.02]]
Humday Construction Company
WA PFH 387-2(3) Clear River Road



1. Qualifications.

The following individuals will be providing quality control and quality assurance inspection and testing on the project.

a. Erica Lewis will be the Quality Manager and will principally be doing Quality Assurance inspections on grading, structures, walls, survey and other items detailed elsewhere in this plan. Erica has a B. S. in Civil Engineering and has worked the past two years for Muenster Construction Co as the Quality Control Manager. Prior to that Jane spent eight years working as an inspector and project engineer for Washington DOT.

b. John Fisher will principally be performing Quality Control inspections on work performed by Muenster Construction Co. This will include clearing, grading, culverts and aggregate base and emulsified base placement. John will also be doing the Quality Control for seeding, willow planting and permanent signs and pavement markings. John has a B. S. in Construction Management and has spent the past three years working for Muenster Construction Co. as a culvert foreman and project engineer. Prior to that he worked three years for Cooke County Public Works as an inspector class one. John will be Quality Assurance inspector for traffic control. John will be the alternate Quality Manager

c. Lillie Roe will be performing Quality Control inspections on structure work, including the bridge and the walls on the project. Lillie works for Structural Industries as a licensed Structural Engineer. She has worked in this capacity for the past 10 years, primarily in the role of project engineer on construction projects.

d. Stephanie Lee will be doing Quality Control inspections on survey, guardrail, traffic control and other items as detailed elsewhere in this plan. She will also be performing Quality Assurance inspections on clearing, culverts, base rock, emulsified base, paving and other items as detailed elsewhere in this plan. Stephanie spent the past 7 years working for Waudby Contractors as a foreman for a paving crew. Prior to that she worked as a seasonal surveyor for the US Forest Service as well as a seasonal worker for various construction contractors doing grade checking and materials testing.

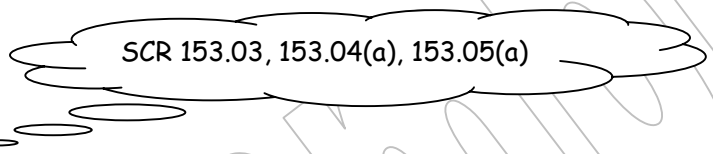
e. Hernandez Testing will be providing all the testing on the project except the Quality Control for the crushing. Hernandez is a respected testing firm that has been in business for the past 35 years. Austin Roberts will be the primary Quality Control compaction tester, including embankment,

culverts and structures. Austin has been a tester for the past 3 years and is Level 2 certified by WSDOT. The remaining specific testers, and their qualifications, will be provided as we get closer to on-site testing. All off-site tests (mix designs) will be conducted in their main lab located in Spokane, WA.

f. Grace Becker will be the Quality Control gradation tester during crushing. Grace works for Williams Crushing and has been their Quality Control tester for the past 3 years.

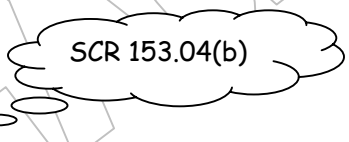
g. Issac Galloway will be the Quality Control inspector for the paving operations. Issac is a foreman for Emory Paving and has been a foreman for the past 15 years.

h. If other inspectors or testers are needed, qualification information will be provided.



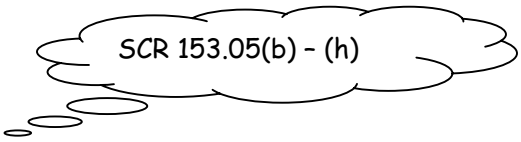
2. Authority.

Erica Lewis reports directly to Linda Russel, Vice President. Erica will be coordinating all activities with the Superintendent and various Foremen on the project. She has the authority to stop all work (including that of subcontractors and suppliers) for non-compliance reasons. All testers and inspectors will report directly to Erica Lewis. They will not have authority to stop work.



3. Chart of Inspections

Appendix A contains a chart of inspections (both Quality Control and Quality Assurance) that details the definable features of work, the responsible inspector and the frequency and method of inspections.



4. Quality Assurance

The first part of the Quality Assurance Plan is to develop a list of definable features of work for this project. The list of definable features for this project follows:

a. Survey
b. Clearing and Grubbing
c. Erosion Control Devices

d. Excavation
e. Culvert Installation
f. Crushing
g. Embankment
h. Wall Installation
i. Fencing
j. Finishing Subgrade
k. Willow Planting
l. Seeding/Mulching
m. Bridge Work
n. Base Rock
o. Emulsified Treated Base
p. Guardrail
q. Paving
r. Traffic Control
s. Pavement Markings & Permanent Signs

A definable feature is a portion of the work that due to its size, environmental sensitivity, complexity, location, etc. requires attention to the details of how the work will progress and how compliance with the contract will be obtained. The Contractor and Government need to agree on what the definable features of work are for a given project.

The second part of the Quality Assurance Plan is to develop a specific tracking report for each definable feature of work. Details of the tracking report and its usage follow:

Tracking Report

The tracking report is an internal document that tracks inspections, testing, and necessary follow-up to assure all work is in compliance with the contract.

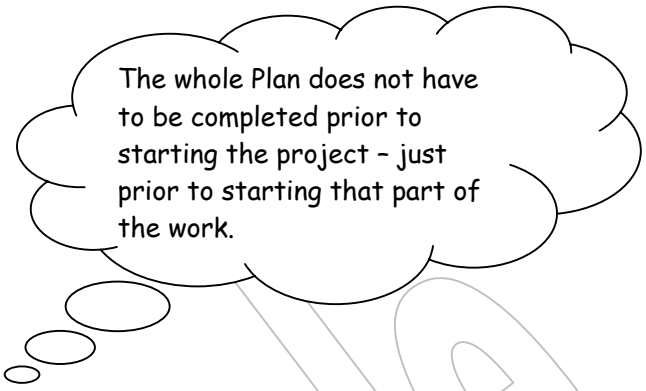
The tracking report is not required by the contract, but it is one example of a way to coordinate and track all the Quality Assurance activities.

Prior to the start of a definable feature of work (including subcontractor and supplier work), the base tracking report will be developed – this will include all areas of testing and inspection, including a pre-work inspection to assure all submittals and, certifications as well as preparatory work is completed and that all materials to be incorporated into the work are in compliance with the contract. A copy of the base report will be submitted to the Government at least 2 weeks prior to starting that portion of the work.

Any deficiencies noted during Quality Control or Quality Assurance inspections of an item of work will be entered into the tracking report for follow-up. Any reoccurring problems will be addressed between Erica Lewis and the foreman (or superintendent if necessary) of the operation.

Upon completion of a feature of work, the original of the tracking report (that includes all notes on inspections) will be provided to the Government. At any time during the work the Government may review the current tracking report or request a copy of the current tracking report.

Copies of the base tracking reports for the surveying and clearing and grubbing items are included in Appendix B. The base tracking reports for erosion control devices and excavation are in the final stages of development and will be forwarded upon completion, but no later than 2 weeks prior to commencing work on these items.



The third part of the Quality Assurance Plan is to hold "toolbox" meetings. On the project as work progresses, prior to the start of each definable feature of work, a "toolbox" meeting will be held with the foreman and crew. The Government will be invited to the meetings. Each meeting will cover the applicable specifications of the contract and the expectations from the crew for the work. Any work requiring specialized training will be reviewed prior to start up (during development of the tracking report – see Appendix B) to assure the work crew is qualified and prepared to complete the work in compliance with the contract. These "toolbox" meetings may occur prior to starting work for the day, during a lunch break or at the end of the day as needed.

SCR 153.04(c), 153.07

5. Record Management.

Erica Lewis will have overall responsibility for managing all paperwork associated with the quality system. A chart of the paperwork to be maintained along with person responsible for completion, timeframe for completion and submission and location of the contractor copy of the paperwork is found below.

Unless otherwise indicated, originals will be provided to the Government upon completion. All reports will be used per contract specifications, except the tracking report (which is a Schmidt Construction Co. report and not required by the contract).

Quality Control and Assurance Plan

Paperwork	Responsible for Completion	Timeframe of Completion and Submission	Location of Contractor Copy
Quality Report	Erica Lewis	End of next work day	Job Trailer
Test Reports	Hernandez Testing and Grace Becker	Per Contract – all results attached to Daily Quality Report	Lab Trailer
Construction Operations Report	Larry Jefferies, Superintendent, Issac Galloway, Foreman and other foremen for subcontractors	End of next work day	Job Trailer
Control Charts & QLPay Results	Hernandez Testing and Grace Becker	Daily or Weekly as appropriate	Lab Trailer (originals too)
WFLHD 470	Erica Lewis	When work ready for inspection per 153.06	Job Trailer
Pay Item Notes	Erica Lewis	When work completed	Job Trailer
Submittals & Certifications	Erica Lewis	As received and reviewed	Job Trailer
Tracking Report	Inspector for each item	Prior to starting work – updated as action taken	Job Trailer
Final Inspection Report	Erica Lewis	Upon completion of a segment of work – prior to Government inspection	Job Trailer

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Survey	Stephanie	Erica	25% of the survey will be randomly checked. If problems are found, more will be checked to delineate the problem area for correction.	Prior to the start of surveying, a meeting with the Government will be held to review the survey and staking process, including methods of notation. 10% of survey will be randomly checked.
Clearing & Grubbing	John	Stephanie	Within 3 hours of starting clearing/grubbing, inspection of operations will occur. If compliance with the contract is found, then inspections will occur once or twice daily or as questions arise.	Work will be inspected once per day for the first three days. If things are ok, will check three times per week.
Erosion Control Devices	Stephanie	Erica	Prior to installation, placement area will be inspected. Within 3 hours of first installation of each type of device, inspection will completed for compliance with the contract and permits. Inspection will occur once per day or as needed if problems.	Each installation will be inspected upon completion of installation. A check of all devices will occur once per week.
Excavation	John	Erica	Within 3 hours of starting excavation, inspection of operations will occur. If ok, then once or twice daily or as questions arise. As each soil type is encountered samples will be taken to classify the soils and obtain maximum density information for use in compaction.	Work will be inspected once per day for the first three days. If things are ok, will check once per week.
Culvert Installation	John	Stephanie	Within 2 hours of starting installation of the first culvert, line and grade of culvert will be checked. Line and grade will be checked with the installation of each culvert segment until three segments are set in a row with no problems with line and grade. After that line and grade will be checked at start of installation, half way through installation and upon completion of installation. Once two culverts are installed without problems, line and grade will be checked once per culvert. If problems are encountered the inspection frequency will increase as indicated above. Excavation and backfill – need details. **Additional details of the inspection testing will be added at least two weeks prior to start of any culvert work.**	First culvert will be inspected midway through installation. Each culvert will be inspected upon completion.

The whole Plan does not have to be completed prior to starting the project – just prior to starting that part of the work.

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Crushing	Grace	Stephanie	Quality tests will be performed 3 weeks before crushing operations are scheduled to begin. Full production tests (in conformance with Sampling and Testing Tables in SCRs) will be performed once per six hours with a minimum of twice per shift. Partial production tests will be performed every 2 to 6 hours – depending on the stage of crushing and outcome of results. These test results will be used to modify the crushing operations. Complete final product tests will be performed once per 1000 ton (in conformance with Sampling and Testing Tables in SCRs). Additional final product tests (either full or partial) will be performed as needed depending on test results and conformance to contract requirements. For Emulsified Treated Aggregate Base, whenever gradation tests are performed from the grade, asphalt content will be determined, but not less than one per 1000 tons. Samples for Humphreys curves will be submitted upon determination of final gradation.	Quality test results will be reviewed prior to submission to the Government. Production and placement tests will be input into QLPay to determine quality of aggregates. Any discrepancies or problems will be field reviewed and corrected.
Embankment	John	Erica	At the start of embankment for each new soil type compaction will be checked three times per lift per embankment area until a suitable rolling pattern is established. Then compaction will be checked twice per layer per 5000 square meters until at least 10 compaction tests in a row pass. Then compaction will be checked once per layer per 5000 square meters. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established.	Work will be inspected twice per day for the first three days. If things are ok, will check once per day.
Wall Installation	Lillie	Erica	Excavation limits, backfill operations and compaction tests will be performed per Table 255-1. – need to add details. **Additional details of the inspection testing will be added at least two weeks prior to start of any wall work.**	Work will be inspected once per day for the first week. If things are ok, will check once per day.

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Fencing	Stephanie	Erica	Alignment and installation will be checked within one day of start up, then spot checked once per day unless problems occur.	Installation will be inspected the first day. If things ok, will check upon completion of a section, at least once per week.
Finishing Subgrade	John	Erica	Within 4 hours of starting finishing compaction and final line and grade will be checked. Compaction will be checked at least four times per 2000 square meters until a suitable rolling pattern can be confirmed. Then compaction will be checked twice per 2000 square meters until at least 10 compaction tests in a row pass. Then compaction will be checked once per 2000 square meters. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established. Final line and grade will be checked for 25% of area until all 25% is within tolerances. Then final line and grade will be checked for 10% of area. If problems are found, more will be checked to delineate the problem area for correction. If more than 3 checks are found out of tolerance inspection frequency will be increased to 25% until tolerances are met again.	Work will be inspected once per day for the first three days, then upon completion of a section of work.
Willow Planting	John	Stephanie	Installation will be checked within one day of start up, then checked once per day.	Work will be inspected the first day. If things ok, will check twice per week.
Seeding/Mulching	John	Stephanie	Set up will be checked prior to start up, first batching will be checked and first placement will be checked. If things are ok, inspection will be twice per day.	Work will be inspected the first day. If things ok, will check twice per week.
Bridge Work	Lillie	Erica	Mix design will be performed per the contract at least 1 month before anticipated concrete work. All concrete tests will be performed (need more detail). Prior to concrete placement, forms and rebar will be inspected for compliance with contract requirements. Precast girders will be inspected at the plant during production. **Additional details of the inspection testing will be added at least two weeks prior to start of any bridge work.**	Work will be inspected at each segment of construction.

Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

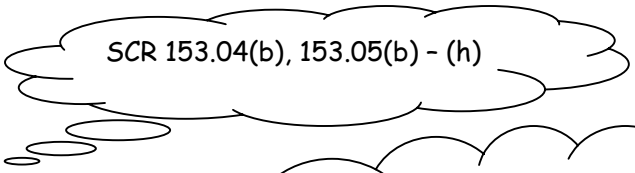
Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Base Rock	John	Stephanie	Gradation testing covered under crushing definable feature. Compaction tests will be completed continuously upon starting of rolling to establish a rolling pattern. Once pattern is established, compaction tests will be one per 200 tons. After 10 passing tests in a row, compaction tests will be one per 500 tons. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established. Line and grade and surface tolerance will be checked once per 200 square meters on the final course. After 5 checks are within tolerances, line and grade and surface tolerance will be checked once per 500 square meters on the final course. If checks show non-conformance with the contract, checks will increase back to once per 200 square meters until problem is determined and resolved.	Work will be inspected once per day.
ET Aggregate Base	John	Stephanie	Gradation testing and asphalt content covered under crushing definable feature. Asphalt content by ignition will be tested each time a gradation test is performed. Compaction tests will be completed continuously upon starting of rolling to establish a rolling pattern. Once pattern is established, compaction tests will be one per 200 tons. After 10 passing tests in a row, compaction tests will be one per 500 tons. Any failing test will be recompacted and retested. If compaction tests show more than three failing tests in a row, a new rolling pattern will be established. Line and grade and surface tolerance will be checked once per 200 square meters on the final course. After 5 checks are within tolerances, line and grade and surface tolerance will be checked once per 500 square meters on the final course. If checks show non-conformance with the contract, checks will increase back to once per 200 square meters until problem is determined and resolved.	Work will be inspected once per day.

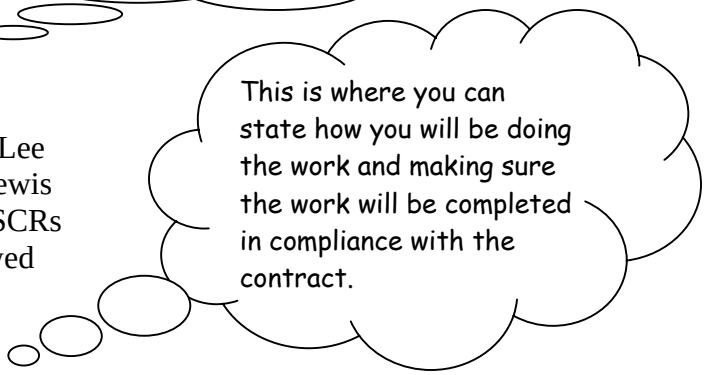
Appendix A – Quality Control and Assurance Activities

SCR 153.04(b), 153.05(b) – (h)

Definable Features	Inspection Responsibilities		Process and Frequency	
	Quality Control	Quality Assurance	Quality Control	Quality Assurance
Guardrail	Stephanie	Erica	Alignment and installation will be checked within 3 hours of start up, then once per day unless problems occur.	Alignment will be checked prior to installation. Installation will be checked once per day for two days, then once every two days.
Paving	Issac	Stephanie	Asphalt Cement will be sampled per Table 401-9. (need details) Mix temperature, gradation, asphalt content, compaction, width and thickness will be performed per Table 401-9. (need details) If conformance is not met, inspection will be increased until conformance is consistent. The smoothness will be checked upon completion of the final surface course. **Additional details of the inspection testing will be added at least two weeks prior to start of any paving work.**	Mix design will be performed per the contract at least 2 months before anticipated paving start up. Work will be inspected once per day.
Traffic Control	Stephanie	John	Installation of devices will be checked within one day of start up, then checked once every two days of installation. Overall operation will be checked twice per day.	Installation of devices will be checked upon installation and twice per week. Overall operation will be checked twice per day.
Pavement markings & Permanent Signs	John	Stephanie	Survey will be checked prior to start up, placement will be checked at start of operation, then twice per day. **Additional details of the inspection testing will be added at least two weeks prior to start of any pavement markings or permanent sign work.**	Layout of pavement markings will be checked prior to placement of markings. 50% of signs will be inspected after installation. If problems, additional signs will be inspected.

Appendix B – Tracking Report





Definable Feature of Work: Surveying
Quality Control Responsible Inspector: Stephanie Lee
Quality Assurance Responsible Inspector: Erica Lewis
Contract Requirements: Section 152 of FP 96 and SCRs
Checks prior to starting work: Surveyor has reviewed requirements & has survey data needs to do work, submission of staking schedule (per 155 – dates and sequences of each staking activity).
Pre-work meeting topics: (152.02 FP) surveying and staking methods, stake marking, grade control for courses of material, referencing, structure control, work schedule, changes in staking schedule, schedule of turning in notes for survey and other pay items.

Initial Inspection - Plan: The first day of staking each item – check 25% of work
List inspection date/time and outcome:

Control Points:

Clearing and Grubbing:

Slope Stakes:

Erosion Control Devices:

Culvert:

Wall:

Fencing:

Top Subgrade:

Bridge Work:

Top Base:

Top ET Base:

Guardrail:

Signs:

Paving:

Striping:

Appendix B – Tracking Report

SCR 153.04(b), 153.05(b) – (h)

Ongoing Inspection (list inspection date/time and outcome):

Control Points:

Clearing and Grubbing:

Slope Stakes:

Erosion Control Devices:

Culvert:

Wall:

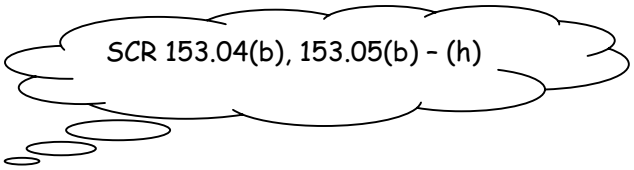
Fencing:

Top Subgrade:

Bridge Work:

Top Base:

Appendix B – Tracking Report



Top ET Base:

Guardrail:

Signs

Paving:

Striping:

Follow-up (list follow-up activities and results):

Appendix B – Tracking Report

SCR 153.04(b), 153.05(b) – (h)

Definable Feature of Work: Clearing and Grubbing
Quality Control Responsible Inspector: John Fisher
Quality Assurance Responsible Inspector: Stephanie Lee
Contract Requirements: Section 201 of FP 96 and SCRs
Checks prior to starting work: Clearing and Grubbing stakes set, logging subcontractor has entered into timber contract with USFS, slash burning locations approved by Government, save trees and oot wad trees are marked. Necessary erosion control devices are installed.

A detailed plan for the work will help in anticipating problems and should limit the number of surprises and areas of rework.

Pre-work meeting topics: Logging subcontractor and grubbing foreman have read 201 requirements and are aware all equipment must be cleaned and inspected prior to starting work. All merchantable timber issues are clear. Slash locations and root wad tree stockpile locations are known and approved. Grubbing foreman is aware of how 201work ties into 204 work. Review the importance of the erosion control devices and the requirement that they be preserved and/or repaired upon damage.

Initial Inspection - Plan: Within 3 hours of starting logging and grubbing – ensure contract requirements being met.
List inspection date/time and outcome:
Logging:

Grubbing:

Ongoing Inspection (list inspection date/time and outcome): (1 to 2 times per day)
Logging:

Grubbing:

Follow-up (list follow-up activities and results):